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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,817	11/12/2003	Takeshi Yokoyama	KOY-0019	8828

7590 07/12/2005

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EXAMINER	
LIANG, LEONARD S	
ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/712,817	YOKOYAMA, TAKESHI	
	Examiner	Art Unit	
	Leonard S. Liang	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figures 10A-B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wen et al (US Pat 6164757) in view of Ramler (US Pat 3984726).

Wen et al discloses:

- {claim 1} An ink jet printer (figure 2); a recording head for jetting ink to be cured by being irradiated with an ultraviolet ray from a nozzle to a recording medium

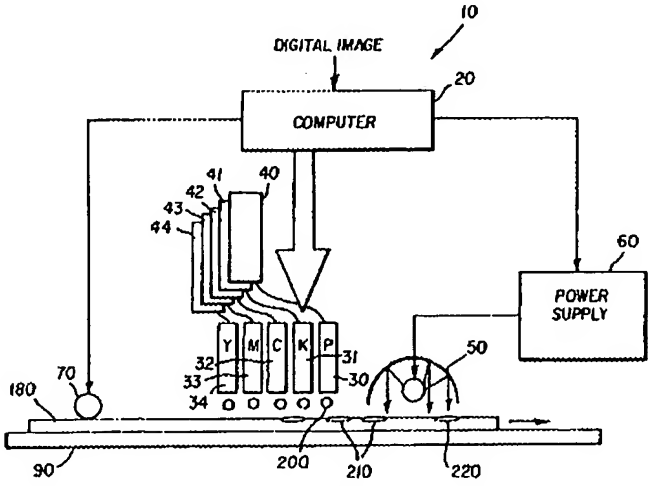

FIG. 2

- {claims 3 and 15} wherein the ultraviolet ray irradiating device further comprises a reflecting member for reflecting the ultraviolet rays radiated from the ultraviolet ray sources
- {claims 6 and 18} wherein each ultraviolet ray source is a high pressure mercury lamp, a metal halide lamp, a hot cathode tube or a cold cathode tube (column 5, lines 14-15)

- {claims 7 and 11} wherein the ink has a cationic curing property (column 5, lines 40-47)
- {claims 8 and 12} wherein a recording type applied to the ink jet printer is a serial type or a line type (figure 2, reference 30-34; abstract)
- {claim 9} An ink jet printer (figure 2); a recording head for jetting ink to be cured by being irradiated with an ultraviolet ray from a nozzle to a recording medium (figure 2, reference 30-34, 50)
- {claim 13} An ultraviolet ray irradiating device which is arranged in an ink jet printer for jetting ink to be cured by being irradiated with an ultraviolet ray from a nozzle to a recording medium (figure 2, reference 30-34, 50)
- {claim 19} An ultraviolet ray irradiating device which is arranged in an ink jet printer for jetting ink to be cured by being irradiated with an ultraviolet ray from a nozzle to a recording medium (figure 2, reference 30-34, 50)

Wen et al differs from the claimed invention in that it does not disclose:

- {claim 1} an ultraviolet ray irradiating device having a plurality of ultraviolet ray sources, the ultraviolet ray sources irradiating the ink jetted on the recording medium by the recording head with a plurality of ultraviolet rays, wherein each of the ultraviolet ray sources radially radiates the ultraviolet ray from a center thereof in a radiation direction, and wherein at least two ultraviolet ray sources adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other

- {claims 2, 10, 14, and 20} wherein at least three ultraviolet ray sources among the ultraviolet ray sources are arranged in line so as to have a convexity in a direction going away from the recording surface
- {claims 4 and 16} wherein the reflecting member is a reflecting plate made of aluminum or a glass-formed plate having a surface on which a thin film of a metallic compound including aluminum is deposited
- {claims 5 and 17} wherein at least three ultraviolet ray sources among the ultraviolet ray sources are arranged in line so as to have a convexity in a direction going away from the recording surface approach, and the reflecting member is shaped to be formed along the ultraviolet sources
- {claim 9} an ultraviolet ray irradiating device having a plurality of ultraviolet ray sources, the ultraviolet ray sources irradiating the ink jetted on the recording medium by the recording head with a plurality of ultraviolet rays, wherein each of the ultraviolet ray sources is a light emitting diode, and wherein at least two ultraviolet ray sources adjacent to each other among the ultraviolet ray sources arranged adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other
- {claim 13} a plurality of ultraviolet ray sources for irradiating the ink jetted on the recording medium with a plurality of ultraviolet rays, wherein each of the ultraviolet ray sources radially radiates the ultraviolet ray from a center thereof in a radiation direction, and wherein at least two ultraviolet ray sources adjacent to

each other among the ultraviolet ray sources arranged adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other

- {claim 19} a plurality of ultraviolet ray sources for irradiating the ink jetted on the recording medium with a plurality of ultraviolet rays, wherein each of the ultraviolet ray sources is a light emitting diode, and wherein at least two ultraviolet ray sources adjacent to each other among the ultraviolet ray sources arranged adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other

Ramler discloses:

- {claim 1} an ultraviolet ray irradiating device having a plurality of ultraviolet ray sources, the ultraviolet ray sources irradiating the ink jetted on the recording medium by the recording head with a plurality of ultraviolet rays, wherein each of the ultraviolet ray sources radially radiates the ultraviolet ray from a center thereof in a radiation direction, and wherein at least two ultraviolet ray sources adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other (figure 1, reference 8)

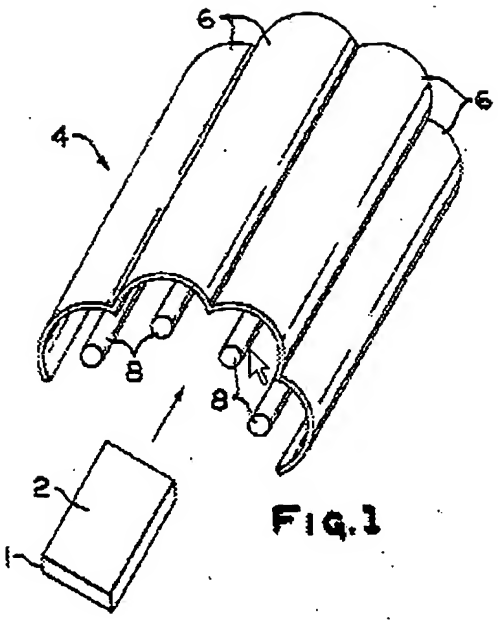

Fig.1

- {claims 2, 10, 14, and 20} wherein at least three ultraviolet ray sources among the ultraviolet ray sources are arranged in line so as to have a convexity in a direction going away from the recording surface (figure 1, reference 8)
- {claims 4 and 16} wherein the reflecting member is a reflecting plate made of aluminum or a glass-formed plate having a surface on which a thin film of a metallic compound including aluminum is deposited (column 2, lines 50-63)
- {claims 5 and 17} wherein at least three ultraviolet ray sources among the ultraviolet ray sources are arranged in line so as to have a convexity in a direction going away from the recording surface approach, and the reflecting member is shaped to be formed along the ultraviolet sources (figure 1, reference 8)
- {claim 9} an ultraviolet ray irradiating device having a plurality of ultraviolet ray sources, the ultraviolet ray sources irradiating the ink jetted on the recording medium by the recording head with a plurality of ultraviolet rays, wherein each

of the ultraviolet ray sources is a light emitting diode, and wherein at least two ultraviolet ray sources adjacent to each other among the ultraviolet ray sources arranged adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other (figure 1, reference 8; column 13, lines 1-7)

- {claim 13} a plurality of ultraviolet ray sources for irradiating the ink jetted on the recording medium with a plurality of ultraviolet rays, wherein each of the ultraviolet ray sources radially radiates the ultraviolet ray from a center thereof in a radiation direction, and wherein at least two ultraviolet ray sources adjacent to each other among the ultraviolet ray sources arranged adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other (figure 1, reference 8)
- {claim 19} a plurality of ultraviolet ray sources for irradiating the ink jetted on the recording medium with a plurality of ultraviolet rays, wherein each of the ultraviolet ray sources is a light emitting diode, and wherein at least two ultraviolet ray sources adjacent to each other among the ultraviolet ray sources arranged adjacent to one another are arranged so as to set distances from the two ultraviolet ray sources to a recording surface of the recording medium to be different from each other (figure 1, reference 8; column 13, lines 1-7)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Ramler into the invention of Wen et al. The

motivation for the skilled artisan in doing so is to gain the benefit of providing an means of providing a constant irradiating intensity, even if one of the ultraviolet ray sources should begin to decrease in intensity.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Helding (US Pat 3826014) discloses a shutter mechanism for radiation curing lamp.

Lutz (US Pat 6248804) discloses ultraviolet and or visible light curable inks with photoinitiators for game balls, golf balls and the like.

Conwell et al (US Pat 6732451) discloses an UV curing module for label printer.

Arx et al (US Pat 6433317) discloses a molded assembly with heating element captured therein.

Ervin et al (US Pat 6509697) discloses a compact microwave-powered lamp, inkjet printer using this lamp, and ultraviolet light curing using this lamp.

Richards (US PgPub 20030227527) discloses systems and methods for curing a fluid.

Rohde et al (US Pat 6594465) discloses a radiation unit for a fixation device.

Rohde et al (US Pat 6674990) discloses overheating protection for toner image printed substrate in a radiation fixing device.

Silverman et al (US Pat 4048916) discloses a curing section for continuous motion decorator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S. Liang whose telephone number is (571) 272-2148. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MANISH S. SHAH
PRIMARY EXAMINER